In the Claims:

1. (currently amended) A multispectral focal plane array comprising:

a linear array of photodetectors, the linear array having opposing sides and a thickness that decreases across the linear array from one side to another and each photodetector in the linear array having a distinct spectral response; and

an integrated circuit coupled to a read out of the linear array, wherein the integrated circuit collects electrical signals from the individual photodetectors.

2. (currently amended) A multispectral focal plane array comprising:

a two-dimensional array of photodetectors, the two-dimensional array having opposing sides and a thickness that decreases across the two-dimensional array from one side to another, and the photodetectors being grouped wherein ~~having groups of photodetectors,~~ each group hashaving a distinct spectral response; and

an integrated circuit coupled to a read out of the two-dimensional array, wherein the integrated circuit collects electrical signals from the photodetectors.

3. (original) The multispectral focal plane array of claim 1 wherein the photodetectors are, either photodiodes or photoconductors.

4. (original) The multispectral focal plane array of claim 2 wherein the photodetectors are, either photodiodes or photoconductors.

5. (original) The multispectral focal plane array of claim 1 wherein the photodetectors are fabricated from epilayers of ternary or quaternary compound semiconducting materials whose band-gap varies via a grading of the chemical composition of the photodetector.

6. (original) The multispectral focal plane array of claim 2 wherein the photodetectors are fabricated from ternary or quaternary compound semiconducting materials whose band-gap varies through a grading of the chemical composition of the photodetector.

7. (original) The multispectral focal plane array of claim 1 wherein the photodetectors vary in height and are fabricated from epilayers of compositionally graded compound semiconducting material such that the height of the photodetector determines the distinct spectral response of photodetector.

8. (original) The multispectral focal plane array of claim 2 wherein the photodetectors vary in height and are fabricated from epilayers of compositionally graded compound semiconducting material such that the height of the photodetector determines the distinct spectral response of photodetector.

9. (currently amended) The multispectral focal plane array of claim 7 wherein any photodetector of a given height ~~is a broadband detector which~~ detects more long-wavelength photons than those photodetectors which are shorter and fewer long-wavelength photons than those photodetectors which are taller.

10. (currently amended) The multispectral focal plane array of claim 8 wherein any group of photodetectors of a given height ~~are broadband detectors which~~ detect more long-wavelength photons than those groups of photodetectors which are shorter and fewer long-wavelength photons than those groups of photodetectors which are taller.

11. (original) The multispectral focal plane array of claim 1 wherein the photodetector array is formed of rows of photodetectors each of a distinct height, fabricated from a continuously graded epilayer of compound semiconductor, wherein each row of the two-dimensional array corresponds to a distinct spectral response.

12. (original) The multispectral focal plane array of claim 2 wherein the photodetector array is formed of groups of rows of photodetectors, wherein each group is a distinct height, fabricated from a step-wise graded epilayer of compound semiconductor, wherein each group of rows of the two-dimensional array corresponds to a distinct spectral response.

13. (original) The multispectral focal plane array of claim 1 wherein the photodetector array is a continuously graded epilayer formed of rows of pixels, wherein each row of the two-dimensional array corresponds to a distinct spectral response.

14. (original) The multispectral focal plane array of claim 2 wherein the photodetector array is a continuously graded epilayer formed of rows of pixels, wherein each row of the two-dimensional array corresponds to a distinct spectral response.

15. (currently amended) The multispectral photodetector array of claim 5[[11]] wherein the ternary or quaternary compound semiconducting material system is formed of $Hg_{1-x}Cd_xTe$, wherein the band gap of $Hg_{1-x}Cd_xTe$ varies with chemical composition (x value).

16. (currently amended) The multispectral photodetector array of claim 6[[12]] wherein the ternary or quaternary compound semiconducting material system is formed of $Hg_{1-x}Cd_xTe$, wherein the band gap of $Hg_{1-x}Cd_xTe$ varies with chemical composition (x value).

17. (new) The multispectral photodetector array of claim 1 wherein the thickness decreases generally continuously from one side to another.

18. (new) The multispectral photodetector array of claim 2 wherein the thickness decreases generally continuously from one side to another.

19. (new) The multispectral photodetector array of claim 1 wherein the thickness decreases in a step-wise manner from one side to another.

20. (new) The multispectral photodetector array of claim 2 wherein the thickness decreases in a step-wise manner from one side to another.